SOME OBSERVATIONS ON THE SLENDER-STRIPED RUFOUS MOTH *COENOCALPE LAPIDATA* (HB.) (LEP.: GEOMETRIDAE)

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Abstract

Observations on the Slender-striped Rufous moth *Coenocalpe lapidata* (Hb.), a UK Biodiversity Action Plan species, are presented. To facilitate recording, colour photographs of both the larva and the larval habitat are presented.

The Slender-striped Rufous *Coenocaple lapidata* (Hb.) was identified as a priority for research and conservation by Waring (1994) who summarised the knowledge of its ecology and distribution at that time. The National Moth Recording Network (Waring, 1999) had received or otherwise obtained post-1980 records from only four sites in Britain, three in Scotland and one in northern England. Earlier records report the moth from about a dozen scattered sites in the Highlands and western Scotland, including the island of Canna. It is probable that the moth persists, unrecorded, at some of these sites and at other places today. It has also been found in northern-western Ireland in the past. The purpose of this article is to provide a summary of the several pieces of research on the species undertaken by the author and collaborators since 1994 and to supply tips and encouragement to others interested in investigating the distribution, status and ecology of this moth.

Plate J: Adult Slender-striped Rufous *Coenocalpe lapidata* (Hb.)

Visits to sites in Perthshire and East Ross in 1994

In late September 1994 the author visited the best-known British site for the Slender-striped Rufous, near Trinafour in mid-Perthshire, where the moth has been known since at least the 1950s (Waring, 1994a). The aim was to collect data to guide future searches for this moth and to improve our knowledge of the ecology of the species. David Barbour and I also followed up some recent records from a site by Lairg, East Ross, where the moth had been recorded at a Rothamsted light trap on repeated occasions between 1985 and 1990. Over the fence from the Lairg trap site we found several hectares of sheep pasture dominated by rushes *Juncus effusus*. Here we saw a male and female Slender-striped Rufous at rest on *Juncus* stems by searching after dark on 29 September 1994, having been unsuccessful in finding the moth there by day. Two males and two females were found in a similar search the following night and five males came to a Robinson light trap I operated all that night on the site (30 September 1994).

The Lairg site was searched throughout two afternoons and a morning, watching out for females, which sometimes fly by day. I was hoping to observe egg-laying and get an indication of larval foodplants. No egg-laying was seen by day or night but the weather was poor for much of the time, with prolonged rain. Sometimes the adult moths have been seen flying in numbers on sunny afternoons but disappearing as soon as the sun becomes obscured by cloud (Graham Collins and John Chainey, pers. comm.).

The larval foodplant(s) are currently unknown. Botanical descriptions were made at each point where a moth was found at rest at the Lairg site, with the aim of narrowing down the range of possibilities, and a selection of the same plants was presented to females for egg-laying in captivity. Creeping Buttercup *Ranunculus repens* was found below every resting moth and was sometimes the only broadleaved plant present amongst the rushes on which the moths perched. Tormentil *Potentilla erecta* and Marsh Pennywort *Hydrocotyle vulgaris* were the only other frequent herbs. A on this work was produced for Scottish Natural Heritage in 1994. The main conclusions were that the Creeping Buttercup was a strong candidate as a larval foodplant, that the moth could well occur in many open, *Juncus*-dominated places within the known range and in other upland areas and that little effort has been made to search for new localities in the last thirty years. Records indicate that the moth flies in early September in Perthshire, but in late September and into October further north. Because the moth was only reported from six 10km squares between 1960 and 1980, and four between 1980 and 1995, but is likely to be more widespread, Red Data Book Category 3 – Rare, was suggested as the most appropriate conservation category for the moth at that time (Waring, 1995a). Subsequently the moth has been reported from a small number of addition sites distributed over a wide area and the conservation grade of Nationally Scarce category A is considered the most appropriate based on available information (Waring *et al.*, 2003).

Observations from rearing in captivity

The author collected eggs from three females in September 1994 to enable study of the larvae, with the aim of increasing the chances of finding them in the wild and establishing the larval foodplant(s). The females attached their small yellow eggs

singly to the leaves and stems of any plants with which they were enclosed, but mainly the eggs were laid low down on stems and on the base of the containers in which they were confined. Many eggs were only weakly attached or laid loose and dropped through the vegetation to roll about on the floor of the container. This suggests it is up to the caterpillars hatching in the spring to locate suitable food. The eggs over-wintered successfully in plastic boxes in a sheltered spot outdoors in Peterborough and the larvae hatched over a period of two weeks from 10 March 1995. They were then brought indoors to increase their rate of development so that details of their habits and photographs of the larvae could be produced in time to help searches of actual and potential breeding grounds in the field season of 1995. A photograph and notes on the habits of the larvae were published (Waring, 1995c) and the photograph is included in Waring *et al.* (2003). The newly hatched larvae were given leaves of Meadow Buttercup *Ranuculus acris* and a cultivated *Potentilla* on the basis that plants of both genera were the most frequent of herbs where the adult moths were found. Leaves of a cultivated *Clematis montanum* were also provided on the basis that the Rev. J. Hellins (1887-1901) reported rearing some larvae on *Clematis* in the nineteenth century, even though *Clematis* is absent from the breeding grounds in Scotland. The larvae reared in 1995 started feeding mainly on the *Clematis* but also nibbled the *Ranunculus,* on both of which they were successfully reared to pupae. Some were confined to *Ranunculus* exclusively, to confirm that they could complete their development on this plant. Both plants belong to the Ranunculaceae. There was no interest in the *Potentilla* (Rosaceae). Once the larvae were growing, some were offered *Potentilla* again, and also Dandelion *Taraxacum officinale* agg., which is often accepted by larvae which are genuinely polyphagous on low plants. Neither of these plants was accepted, even when the larvae were offered no alternative. Feeding was mainly after dark and as the larvae grew in size, they tended to move off the foodplant to rest by day. So, if you wish to discover the larvae and natural foodplant of this moth in the wild, the hot tip is to search *Juncus* flushes, by night for preference, looking out for a greenish yellow larvae, probably on *Ranunculus* leaves. At the time of writing (January 2004), the author has not had the opportunity to search for larvae at any of the sites where the moth is currently known to occur, and no one else has reported successfully finding the larva in the wild.

Searches in Northern Ireland in 1998

The Slender-striped Rufous was searched for on the 17 and 19 September 1998 on the rough moorland pasture between Cuilcagh mountain and Florencecourt, County Fermanagh, by the author with a team from Butterfly Conservation Northern Ireland Branch (Waring, 1998). The moth is one of fifty moth species on the Butterfly Conservation Regional Action Plan for Northern Ireland. It was last recorded in the province on 20 September 1914 by J.E.R. Allen, at this locality. The lack of records from the intervening decades may be simply because no-one has searched for the moth or been in the locality at the right time subsequently. The habitat is thought to have changed little since 1914. We found rushy places with buttercups *Ranunculus* spp., just like those occupied in Scotland, but we did not see the moth despite hunting

by day and running a number of light-traps all night. The weather was against us however. The first night (17 September 1998) was so windy that an actinic trap on a similar site nearby was blown over and both nights were cold. Return visits were made by Ian Rippey and others before the end of the flight season in the hope of seeing the moth, but these were also unsuccessful.

Searches in Scotland and Northern Ireland in 2003

The Slender-striped Rufous was the subject of fieldwork by the author in Scotland and Northern Ireland again in 2003. As part of a Field Studies Council Moth Course held at Kindrogan Field Centre, Perthshire, 15-18 September in 2003, the author led the participants in an investigation of the habits and habitat of the moth at Trinafour, and showed them how to find the moth so that they could search for it elsewhere in Scotland. With the permission of the private owner, eleven of us, plus Tom Prescott, Julie Stoneman and party from Butterfly Conservation, assembled at the site and conducted police-cordon-style searches through the rushy habitat from just before dusk until well after dark. We also operated six light-traps from dusk until 00.30hrs. Lynne Farrell, who was with us from SNH, recognised immediately from the presence of plants such as Harebell *Campanula rotundifolia* and Quaking-grass *Briza media* that there was base-rich flushing of this predominantly acidic site, and she confirmed the dominant rush as *Juncus acutiflorus*. A male Slender-striped Rufous in fair condition was disturbed from amongst rushes and grass as soon as we arrived at 19.45 hours, which was a great encouragement. About ten individuals were noted on the wing between 19.50-20.00 hours, of which at least three were females (Waring, 2003). Egg-laying has not been reported in the wild and we were not fortunate enough to see it but eggs were subsequently obtained from the three females, which again laid them freely when kept in small plastic boxes with samples of the plants from the flush. Buttercups *Ranunculus* spp. were present, but not as abundantly as at Lairg.

Like Trinafour, the site at Lairg is another rushy flush with base enrichment. There are in fact large lime-rich rocks scattered about the site. This factor may help explain the scattered distribution of the moth and narrow down future searches.

On the night of 14 September 2003 half a dozen of us had searched and operated a light trap from dusk until 23.30hrs amongst rushes and buttercup in rough pasture at Dun Coillich, near Glengoulandie, only eight miles south-east of Trinafour, without success, and others have tried prospecting likely places for it with negative results, so the moth is not easily found. This was also the case in Northern Ireland where I joined Maurice Hughes (BC Development Officer), David Allen, Kenny Murphy and Vincent McLaughlin after the Scottish work, taking with me a live female Slender-striped Rufous to show them. From 23-25 September we searched a number of sites near Cuilcagh mountain and elsewhere in Co. Fermanagh (including Legalough and apparently suitable habitat within parts of the extensive limestone scarp) without success. The results of this work will be recorded in a report by David Allen and Maurice Hughes (in prep.) for the Environment & Heritage Service (EHS) of Northern Ireland.

Fig. 1. Breeding site for *Coenocalpe lapidata* at Trinafour, Perthshire, September 1994.

Fig. 2. Final instar larva of *Coenocalpe lapidata* and feeding damage to leaf.

PLATE K

Conclusions

The following conclusions can be drawn from this work:

- The Slender-striped Rufous is a nationally scarce species.
- It is likely that additional breeding sites remain to be discovered within Scotland.
- Whether the moth survives in Northern Ireland is not known, but there appears to be much potentially suitable habitat.
- Buttercups such as Creeping Buttercup and Meadow Buttercup will probably prove to be the main larval foodplant(s).

The following recommendations for further work by conservation agencies are made:

- Establish contact with the owners of occupied sites, as has now been done at Trinafour, and liaise concerning any proposed changes of site management.
- Monitor numbers of the moth and site condition with an annual visit if possible.
- Determine whether base-rich flushing is common to all the sites from which the moth has been recorded. If so, this may prove helpful in narrowing down potential sites for future searches.
- Search occupied sites for larvae, using the guidance above, to determine the larval foodplants and improve our understanding of the habitat requirements of this interesting but poorly recorded moth.

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